

REMARKS

Claims 1 - 20 are currently pending in the application. By this amendment, claims 1, 9, 11, and 19 are amended to address grammatical and spelling errors.

Claims 4 and 14 have been rejected under 35 U.S.C. 112, first paragraph as containing subject matter not described in the specification. This rejection is traversed.

The Examiner has stated that the specification does not set forth detecting means to detect a charging state of the refresh ink droplet. This is incorrect.

Paragraph [0075] beginning on page 21, line 9 describes how the charge of a refresh ink droplet is detected. Specifically, a current is induced when the charged refresh ink droplet impinges upon the orifice electrode receiving member 11. The specification identifies a refresh ink droplet detecting means as element 61 and clearly states that this detection means determines the condition (or charge) of the refresh ink droplet by the current induced. As stated in the specification,

“When the charged refresh ink droplet 15 ejected at time T5 impinges the orifice electrode/ink receiving member 11, then an electric discharge occurs, thereby generating an electric current. The **refresh-ink ejection condition detection circuit 61** detects the electric current by the current-voltage converter/amplifier 611 and outputs a detection signal d5 shown in FIG. 5(d). The defective-condition determining circuit 62 determines ink-ejection condition based on the voltage value of the detection signal.

Claims 4 and 14 recite, “...detecting means includes a detector that detects a charging state of the **refresh ink droplet**.” Thus, there is a means for detecting a refresh ink droplet charge state and this means is described as **refresh-ink ejection condition detection circuit 61** in the aforementioned paragraph. In particular, the refresh-ink ejection condition detection circuit 61 corresponds to the detector in claims 4 and 14 that detects a charging state of the refresh ink droplet, and this is fully supported in the specification at page 21, lines 9-17.

Claims 1, 2, 4 - 8, 10 - 12, 14 - 18, and 20 have been rejected under 35 U.S.C. 102(b) as being anticipated by Schneider et al. (US 4,638,325). This rejection is traversed.

The present invention relates to a drop-on-demand type inkjet recording device as recited in claim 1, while Schnieder relates to a continuous type inkjet recording device as recited at line 7 of column 1. Thus, the component of the inkjet recording device of the present invention is entirely different from that of the inkjet recording device of Schneider.

Further, Schneider does not disclose that the detecting means detects an ejection condition of the ejection member based on the refresh ink droplet as recited in claim 1.

Since a drop-on-demand inkjet recording device ejects ink droplets that are necessary only for recording, there is a danger that ink clinging around the nozzle gets dry and condensed. If the ink gets dry, then a recording ink droplet that is ejected at the beginning of the next recording-dot-forming period may be ejected unstably, causing improper printing. In order to overcome the above problem, the conventional inkjet recording device ejects refresh ink droplets during the recording-dot non-forming period in order to prevent ink clinging near the nozzle from getting dry and condensed. This makes it possible to properly and stably eject the recording ink droplet even at the beginning of the next recording-dot-forming period (see line 10 of page 23 to line 3 of page 24 in the specification of the present application).

In claim 1, the detecting means detects the ejection condition of the ejection member based on the above-described refresh ink droplet.

On the other hand, the continuous type inkjet recording device ejects ink droplets continuously, that is, it transfers only the ink droplets that are necessary for recording to the recording medium while collecting the ink droplets that are unnecessary for recording into the gutter 36 (see line 60 of column 3 of Schneider). Therefore, in Schneider there is no recording-dot non-forming period in which the

refresh ink droplets are ejected. Since the refresh ink droplets are not ejected, Schneider also does not detect the ejection condition based on the refresh ink droplet.

Further, the Examiner asserts that the refresh ink droplet in the present invention is disclosed in Schneider as the ink droplet 24. However, the Examiner is incorrect as the ink droplet 24 in Schneider is different from the refresh ink droplet.

As recited in claim 1, the deflection means deflects the refresh ink droplet such that the deflected refresh ink droplet impinges on the collector, and the detecting means detects an ejection condition of the ejection member based on the refresh ink droplet.

Even if it is assumed that the ink droplet 24 in Schneider that is collected into gutter 36 corresponds to the refresh ink droplet, Schneider does not detect the ejection condition based on the ink droplet 24 that is collected into the gutter 36. Further, even if it is assumed that the ink droplet 24 that lands on the electrode 46 corresponds to the refresh ink droplet, Schneider does not deflect the ink droplet 24 that lands on the electrode 46 such that the deflected refresh ink droplet impinges on the electrode 46.

Claim 11 differs from claim 1 in that claim 11 is directed to the ink jet recording device per se, while claim 1 is directed for the detection device for detecting the ejection condition for an ejection member of a drop-on-demand type inkjet recording device. However, claim 11 differs from Schneider for the same reasons as discussed above. Specifically, claim 11 requires an ejection member for ejecting a refresh ink droplet. As noted above, Schneider does not disclose a refresh ink droplet. In addition, claim 11 requires a deflection means for deflecting the refresh ink droplet such that the deflected refresh ink droplet impinges on the collector, and a detecting means for detecting an ejection condition of the ejection member based on the refresh ink droplet. As discussed above, the ink droplet 24 which lands on the electrode 46 in Schneider is not deflected by a deflection means, and the ink droplet 24 which is collected in the gutter 36 in Schneider, is not used for

detecting an ejection condition of the ejection member based on the refresh ink droplet.

In view of the above, claims 1 and 11, and their dependent claims 2, 4-8, 10, 12, 14-18 and 20 are not anticipated by Schneider, and this rejection for anticipation should be withdrawn.

Furthermore, dependent claims 3 and 13 would not be obvious over Schneider in view of *In re Harza*. As the Examiner will recognize, even if Schneider were “multiplied” as suggested by the Examiner, it would still lack the essential features of base claims 1 and 11 discussed in detail above. Therefore, the rejection of claims 3 and 13 for obviousness should now be withdrawn.

Claims 3, 9, 13, and 19 were rejected as being obvious over Schneider in view of U.S. Patent 4,392,142 to Seachman, and claims 9 and 19 have been rejected as being obvious over Schneider in view of U.S. Patent 4,990,932 to Houston. These rejections are traversed. The Seachman reference has been relied upon as showing a plurality of nozzles. Seachman does not make up for any of the deficiencies of Schneider with respect to claims 1 and 11; thus, dependent claims 3, 9, 13, and 19 would not be obvious over a combination of Schneider and Seachman. The Houston reference has been relied upon as showing an optical sensor. However, like Seachman, Houston does not make up for any of the deficiencies of Schneider with respect to claims 1 and 11; thus dependent claims 9 and 19 are not obvious over a combination of Schneider and Houston.

In view of the foregoing, it is requested that the application be reconsidered, that claims 1 - 20 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: mike@wcc-ip.com) to discuss any other changes deemed necessary in a telephonic or personal interview.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



Michael E. Whitham
Reg. No. 32,635

Whitham, Curtis & Christofferson, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
703-787-9400
703-787-7557 (fax)
CUSTOMER NUMBER 30743